REMARKS

Claims 1-18 have been amended. No new matter has been added.

The Final Office Action mailed July 30, 2003, has been received and reviewed. Claims 1-18 are currently pending in the application. Claims 1-18 stand rejected. Applicant proposes to amend claims 1-18, and respectfully request reconsideration of the application as proposed to be amended herein.

35 U.S.C. § 112 Claim Rejections

Claims 6 and 12 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 6 and 12 and respectfully requests withdrawal of the indefiniteness rejection.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 5,368,906 to Ferrier nee Pegot et al.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,368,906 to Ferrier nee Pegot *et al.* ("Ferrier"). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Ferrier discloses a thermic protection device for protecting an internal wall of a hollow structure. The thermic protection device includes refractory fibers, which are wound around a mandrel. The refractory fibers include KEVLAR® aromatic polyamide fibers. A resin is impregnated under the refractory fibers and the structure is polymerized to form the thermic protection device.

As amended, claim 1 recites a method for insulating or thermally protecting a rocket motor assembly. The method comprises providing a precursor material comprising at least one aromatic polyamide. The precursor material has a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber. A reinforcement structure comprising the precursor material is formed and is impregnated with a resin matrix to form a rocket motor ablative material. The rocket motor ablative material is used on a portion of a rocket motor assembly.

Ferrier does not expressly or inherently describe each and every element of claim 1 because it does not disclose the limitations of "providing a precursor material comprising at least one aromatic polyamide, the precursor material having a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber" and "carbonizing the precursor material to form a reinforcement structure." Nothing in Ferrier describes an average fiber length of the refractory fibers or that the structure formed from the refractory fibers is carbonized.

Since Ferrier does not describe each and every element of claim 1, Applicant respectfully requests that the anticipation rejection be withdrawn.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on the Admitted Prior Art in View of U.S. Patent No. 3,699,210 to Binning et al.

Claims 1-7 and 13-15 stand rejected under 35 U.S.C. § 103(a) ("Section 103") as being unpatentable over the admitted prior art in view of U.S. Patent No. 3,699,210 to Binning *et al.* ("Binning"). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103 rejection:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant respectfully submits that the Section 103 rejections of claims 1-7 and 13-15 are improper because the cited references do not teach or suggest all the limitations of the claimed invention or provide a motivation to combine to produce the claimed invention.

Binning discloses a method of carbonizing fibers, such as aromatic polyamide fibers. The fibers are first pretreated by heating at a temperature of 180°C-550°C in an oxygen-containing environment for an amount of time sufficient to blacken the fibers. The blackened fibers are then heated in a laser beam in a non-oxidizing environment at a temperature from 700°C-1200°C for longer than one-tenth of a second.

Applicant notes that the Examiner's rejections described in Points 7 and 9 appear to be the same. Office Action of July 30, 2003, p. 3-4 and p. 6-7. Therefore, the rejections in Points 7 and 9 are addressed together.

Binning does not teach or suggest the limitation of "providing a precursor material comprising at least one aromatic polyamide, the precursor material having a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber," as recited in claim 1. Nothing in Binning teaches or suggests that its precursor fibers have a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber. The admitted prior art also does not teach or suggest this limitation.

The cited references also do not provide a motivation to combine their teachings to produce the invention of claim 1. "[T]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01. Moreover, the fact that the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without an objective reason to combine the teachings of the references. *Id.*

The Examiner states that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the rayon of the admitted prior art with polyaramid since rayon is no longer available and since Binning et al. prefers polyaramid to rayon and particularly since Binning et al. discloses such material can be used in the same type of

environment as applicant's." Office Action of July 30, 2003, p. 3-4. However, even assuming *arguendo* that the Examiner's motivation is proper, the claimed invention would not be produced because the precursor material would not have a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber.

Since Binning and the admitted prior art do not teach or suggest all the limitations of claim 1 and do not provide a motivation to combine, Applicant respectfully requests that the obviousness rejection be withdrawn.

Claims 2-6 and 13-15 depend from claim 1 and, therefore, are allowable, *inter alia*, as depending from an allowable base claim.

As amended, claim 7 recites a method for insulating or thermally protecting a rocket motor assembly. The method comprises providing a precursor material comprising at least one poly(meta-arylaramid). The precursor material has a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber. A reinforcement structure comprising the precursor material is formed and impregnated with a resin matrix to form a rocket motor ablative material. The rocket motor ablative material is used on a portion of a rocket motor assembly.

The limitations of claim 7 are similar to those in claim 1 and, therefore, claim 7 is allowable for substantially the same reasons discussed above with claim 1. Specifically, claim 7 is allowable because the cited references do not teach or suggest "providing a precursor material comprising at least one poly(meta-arylaramid), the precursor material having a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber." The cited references also do not teach or suggest that the precursor material comprises poly(meta-arylaramid), as acknowledged by the Examiner.

The cited references also do not provide a motivation to combine their teachings to produce the invention of claim 7. In rejecting claim 7, the Examiner provides the same motivation to combine the cited references as provided for claim 1. However, even assuming *arguendo* that the Examiner's motivation is proper, the claimed invention would not be produced because the precursor material would not have a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber.

Since Binning and the admitted prior art do not teach or suggest all the limitations of claim 7 and do provide a motivation to combine, Applicant respectfully requests that the obviousness rejection be withdrawn.

Obviousness Rejection Based on the Admitted Prior Art and Binning, and Further in View of U.S. Patent No. 3,576,769 to Hirsch et al.

Claims 7-12 and 16-18 stand rejected under Section 103 as being unpatentable over the admitted prior art and Binning, as applied to claim 1 above, and further in view of U.S. Patent No. 3,576,769 to Hirsch *et al.* ("Hirsch"). Applicant respectfully traverses this rejection, as hereinafter set forth.

Applicant notes that the Examiner's rejections described in Points 8 and 10 appear to be the same. Office Action of July 30, 2003, p. 4-5 and p. 7-8. Therefore, the rejections in Points 8 and 10 are addressed together.

Hirsch discloses a method of semicarbonizing an aromatic polyamide by exposing the aromatic polyamide to a moderate temperature over an extended time period. To semicarbonize the aromatic polyamide, the temperature is slowly raised from 25°C to 250°C or 500°C over a time period of 45-60 minutes. Hirsch also discloses that exposing the aromatic polyamide to higher temperatures, such as those required to carbonize the aromatic polyamide, causes products including the aromatic polyamide to become embrittled and weak. The products obtained by the method of Hirsch include semicarbonized aromatic polyamides and the properties of these products are distinguished from the properties of products produced by a carbonizing process.

The admitted prior art, Binning, and Hirsch do not teach or suggest "providing a precursor material comprising at least one poly(meta-arylaramid), the precursor material having a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber," as recited in claim 7. As discussed above, the admitted prior art and Binning do not teach or suggest this limitation. While Hirsch discloses using poly(meta-arylaramid), Hirsch does not teach or suggest that the poly(meta-arylaramid) has a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber. Therefore, Hirsch does not cure the deficiencies in the admitted prior art and Binning.

The admitted prior art, Binning and Hirsch also do not provide a motivation to combine to produce the claimed invention. The Examiner states that it "would have been obvious to one of ordinary skill in the art at the time the invention was made to use any type of polyaramid such as NOMEX as the polyaramid in the admitted prior art and Binning et al. since Binning et al. does not indicate only specific polyaramids can be used, and since Hirsch et al. shows that NOMEX is known in the art as a heat-resistant material." Office Action of July 30, 2002, p. 7-8. However, even assuming *arguendo* that the Examiner's motivation is proper, the invention of claim 7 would not be produced because the precursor material would not have a denier per fiber ranging from 1.5 denier per fiber to 3.0 denier per fiber.

Furthermore, Hirsch discloses semicarbonizing (partially carbonizing) aromatic polyamide fibers to produce aromatic polyamide fibers that are non-flammable, thermally stable, chemically inert, and exhibit good dimensional stability at elevated temperatures. Hirsch also states that if the aromatic polyamide fibers are carbonized, rather than being semicarbonized, the aromatic polyamide fibers become weak and embrittled. Since the teachings of Hirsch relate to semicarbonizing the aromatic polyamide fibers and disclose that carbonizing the aromatic polyamide fibers is undesirable, Hirsch teaches away from combination with the cited references.

Since the cited references do not teach or suggest all the limitations of claim 7 or provide a motivation to combine, Applicant respectfully submits that the Section 103 rejection is improper and should be withdrawn.

Claims 8-12 and 16-18 are allowable, *inter alia*, as depending on an allowable base claim.

ENTRY OF AMENDMENTS

The proposed amendments to claims 1-18 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1-18 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,

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